State of Illinois
Department of Transportation
Division of Highways
Springfield

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SPECIFICATIONS
FOR
BITUMINOUS PREMIX FOR MAINTENANCE USE
SMP - PROPRIETARY

Serial Number: M134-02

1. DESCRIPTION. The patching material shall be composed of a mineral aggregate, plant-mixed with a liquid asphalt and chemical additives from the suppliers of the proprietary mixtures. The bituminous material shall be capable of coating wet aggregates without stripping, and shall be available in various grades so that one such grade will enable a stockpile to remain pliable and workable at a temperature of -26 °C (-15 °F). The patching material shall be capable of maintaining adhesive qualities in patched areas which are damp or wet at time of application, and also after remaining in an uncovered stockpile for up to six (6) months.

2. MATERIALS. Control of the materials shall be in accordance with the general requirements of Section 106 of the current Standard Specifications for Road and Bridge Construction. A five kilogram (ten-pound) sample of the mineral aggregate and one-liter (one-quart) sample of the liquid asphalt shall be submitted to the Bureau of Materials and Physical Research, 126 East Ash Street, Springfield, Illinois, for performing the tests specified herein.

(a) Aggregate

All Coarse Aggregate used in the proprietary mixtures shall consist of crushed stone of Class B quality or better as defined in Article 704.01(a) & (b) of the above cited Standard Specifications.

(b) Bituminous Materials

The bituminous material shall be a formulation of the liquid asphalt blend prepared under the supervision of the proprietary mix supplier. It shall meet the requirements of ASTM D 2026 or ASTM 2027, whichever applies, modified as follows:

ASTM D 92 Flash point (COC), °C (°F) - minimum	94 (200)
ASTM D 2170 Kinematic Viscosity, 60 °C (140 °F), mm^2/s (cSt)	300-4000
ASTM D 95 Water, % - maximum	0.2

ASTM D 402 Distillate % by Volume of Original Sample

Temperature	
Distillate to 225 ºC (437 ºF)	0
Distillate to 260 ºC (500 ºF)	0-5
Distillate to 315 ºC (600 ºF)	0-25

Residue from distillation to 360 ºC (680 °F) % Volume by Difference	72-95

Residue Tests:

ASTM D 2171 Absolute Viscosity, 60 ºC(140 ºF), Pascal Seconds (Poises)	12.5-42.5 (125-425)
ASTM D 5 Penetration 25, °C (77 °F), 100 g, 5s - minimum	200
ASTM D 113 Ductility, 4 ºC (39 ºF), 1 cm/min,cm - minimum	100
ASTM D 2042 Solubility in Trichloroethylene, % - minimum	99.0

(c) Stripping Tests

The SMP mix shall meet the following stripping tests:

(1) Place 50 grams of cold mix into a beaker containing 400 ml of boiling distilled water. Bring back to boiling and boil for 3 minutes with constant stirring at 1 revolution per second. At the end of 3 minutes, remove the beaker from the heat source and immediately decant the water. Empty the wet mix onto a paper towel and examine. The retained coating shall not be less than 95 percent.

(2) AASHTO T 182 Coating and Stripping of Bitumen-Aggregate Mixtures.

3. INSPECTION. The Engineer or his authorized representative shall have access at any time to all parts of the plant in order to verify weights or proportions and quality of materials used in the preparation of the mixture. The manufacturer shall afford such facilities as may be required for making inspection at the plant and for collecting and forwarding samples of the ingredient materials and bituminous mixture to the Department.

4. PLANT AND EQUIPMENT. Storage facilities and all equipment used in the preparation of the mixture shall be approved by the Department. An approved drier shall be available for surface drying the aggregate when needed. The materials for individual batches shall be measured accurately, either by volume or weight, by approved methods and equipment. A batch type mixer of approved design and capacity shall be used in mixing the ingredient materials. However, approval for the use of a continuous mixer will be given if it can be shown that satisfactory results will be obtained.

5. PREPARATION OF MIXTURE. The aggregate and SMP liquid asphalt shall be proportioned into the mixer and mixed for at least 30 seconds or until a uniformly coated mixture is obtained. The liquid asphalt shall be heated to a temperature of 93 °C, ± 28 °C (200º F, ± 50º F), at the time of mixing, and in accordance with the instructions of proprietary mix supplier. When necessary to heat the aggregates, the aggregates should not be heated to more than 68 °C (155 °F).

6. COMPOSITION OF MIXTURE. The ingredients shall be combined to produce a mixture meeting the approval of the Department and conforming to the following composition limits, by weight, as determined by tests of the prepared mixture:

Gradation of Extracted Aggregate (% Passing)[1/]

SIEVE SIZE	MIX #1	MIX #2
12.5 mm (1/2”)	100	100
9.5 mm (3/8”)	100	90-100
4.75 mm (No. 4)	85-100	20-55
2.36 mm (No. 8)	10-40	5-30
1.18 mm (No. 16)	0-10	0-10
300 µm (No. 50)	0-5	0-5
75 µm (No. 200)	0-2.5	0-2.5
Residual Bitumen [2/]	3-5-7.0	3.5-7.0

[1/]Based on percent of total aggregate weight.
[2/]Based on percent of total mixture weight.

Effective February 1, 2002

This specification supersedes M134-96, effective July 1, 1996.

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